

New, Improved Lubrication Method with Optigear Synthetic 800

CEMENT (USA)

KILN OPEN GEARS

Castrol Optigear® Synthetic 800/2200*

4-Year Savings: \$7,510 (Initial), \$60,510 (After Payback)



THE SITUATION

A major cement maker was using a spray-type (once-through) lube system to apply conventional open gear lubricant to kiln open gears for over four years.

Despite no major replacement of the gears and minimal downtime to change drums, the cost of lubricant and disposal were very high. Constant labor cost to clean nozzles, gears, and covers added significant amount to the total cost of maintenance.

Castrol was asked to review the situation and determine a possible remedy.

BEFORE

- Usage of conventional lube in four years – 36 drums.
- Four-year lubricant cost-\$60,000
- Labor to clean open gears-\$5,600
- Labor to clean nozzles-\$1,000
- Disposal cost of lubricant-\$4,800

Total maintenance cost - \$71,400

AFTER

- Total cost of lube system-\$53,000
- Cost of lube to fill system-\$1,890
- Four-year lubricant cost-\$8,000 (only 4 drums)
- Filter replacement cost-\$1,000
- No gear issues & no cleaning costs

Total maintenance cost - \$63,890

THE SOLUTION

- To significantly reduce maintenance cost without compromising wear protection of the gears, Castrol recommended Optigear Synthetic 800/2200 with improved lubrication method.
- With the support of Castrol engineers, the customer installed an Idler Immersion lube system with low pressure closed-loop oil circulation.
- The system only required 1 drum of oil for initial fill and about 1 drum per year of make-up.
- **Payback on system was approximately 3.5 years.**

- **PAG synthetic oil**
- **Very high viscosity (ISO 2200)**
- **Extremely high viscosity index (320)**
- **Designed for heavy loads**
- **Exceeds AGMA spec.**
- **Excellent low temp flow**
- **Excellent film strength at high temps**

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RECOMMENDATIONS

Lube System: Idler Immersion with Assist Oil Circulation and Filtration

- System is mounted on top of the Kiln piers directly beside the gearing with 1" piping.
- Electric motors are 2 HP, 1200 RPM Baldor catalog #CM3614T, Frame - 184TC
- Delta power gear pumps Model D27, 7 GPM
- Inline strainer to collect large particles.
- Pall filter housing, model HH8300D32XXUWLT with HC8300E6016H 60-micron mesh element.
- A home made spray bar with holes drilled in them spray gear oil onto the gearing
- Paddle wheel "idler" for continuous lubrication



CONCLUSION

- ❖ Consistent coverage on kiln gears with paddle wheel idler back-up for better wear protection.
- ❖ No hard buildup on gears and covers required no labor for cleaning.
- ❖ No disposal cost for waste lubricant.
- ❖ Easy start up at low temp and strong lubrication film at high temps.
- ❖ \$7,510 – four-year savings before payback on lube system
- ❖ **\$60,510 – four-year savings after 3.5-year payback period**



OTHER POTENTIAL APPLICATIONS

Optigear Synthetic 800 is a full synthetic polyglycol lubricant designed to handle very high temperatures, extreme low temperatures, and heavy loads. Other cement applications include: ball mill open gears, kiln trunnion bearings, kiln main gearbox, raw mill gearboxes, raw mill roller lube system, and finish mill bucket elevator gearbox.

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